

**ABSTRACT OF THE DISCLOSURE**

Disclosed is a bi-directional optical-amplifier module including first through fourth optical amplifiers, a mid-stage device for performing a desired signal processing for an upward or downward optical signal passing therethrough, a first optical-signal-path-setting device for supplying an optical signal inputted to a first input/output terminal of the bi-directional optical-amplifier module while outputting an optical signal outputted from the fourth optical amplifier to the first input/output terminal, a second optical-signal-path-setting device for supplying an optical signal inputted to a second input/output terminal of the bi-directional optical-amplifier module while outputting an optical signal outputted from the third optical amplifier to the second input/output terminal, a third optical-signal-path-setting device for outputting an optical signal outputted from the first optical amplifier to a first input/output terminal of the mid-stage device while supplying an optical signal outputted from the first input/output terminal of the mid-stage device to the fourth optical amplifier, and a fourth optical-signal-path-setting device for outputting an optical signal outputted from the second optical amplifier to a second input/output terminal of the mid-stage device while supplying an optical signal outputted from the second input/output terminal of the mid-stage device to the third optical amplifier.